

Core Competency Checklist of Anesthesiologists Working in Adult ICU without Formal ICU Training during Disasters

During disaster, Anesthesiologists working in Adult ICU without formal ICU training are not culpable of professional misconduct (if reported by any internal or external entity), as long as the core competencies are reasonably practiced by Anesthesiologists and recorded. When Disaster Management Act is in force, Anesthesiologists with MBBS plus MD / DNB / DA qualification (without formal training in critical care medicine) should comply with duty of care, if the duty of care is delegated by the competent authority to deliver care in Adult ICU. Scope and Standard of basic ICU care (Level 2 ICU) are enumerated in standard treatment guidelines published by the Govt of India and Consensus Statement (2020) of the Indian Society of Critical Care Medicine.

Mapping of the Core Competencies of Anesthesiologist in Adult ICU

A. Resuscitation and initial management of acutely ill patient

1. Assesses and provides initial management of immediately life threatening conditions: Severe Shortness of Breath, Loss of Consciousness, Non-resolving Chest Pain, Active Bleeding, Coughing up or Vomiting Blood, Victim of Vehicular Accident or Fall from Height or Heavy Machinery, Victim of Physical Assault, Victim of Suicide, Burns or Smoke Inhalation, Near Drowning, Suspected Poisoning, Severe Complications of Snake Bite, Unremitting Severe Abdominal Pain.
2. Performs Basic Life Support
3. Performs and supervises other staff as Team Leader the conduct of Advanced Cardiac Life Support.
4. Orders care plan for post-resuscitation care.

B. Diagnosis, assessment, investigation, monitoring, and data interpretation

1. Obtains structured medical history: at least – allergies, medication history, past and chronic illness, symptoms of present illness, travel history, addictions.
2. Performs physical examination: at least – AVPU, Pulse, BP, RR, Temperature, SpO₂, CBG, Breath Sounds.
3. Orders timely and appropriate laboratory investigations: Hb, TLC, DLC, Platelet Count, Serum Na, Serum K, Serum Urea, Serum Creatinine, Serum Albumin, Serum AST, Serum ALT, Serum Bilirubin, PT, INR, APTT, Routine Urinalysis, Serum C-Reactive Protein, Serum Pro-Calcitonin, Serum NT-pro-BNP or BNP, Serum D-Dimer, Serum CPK, Serum Troponin-T, bacterial and fungal culture sensitivity with antibiogram, viral RT-PCR, viral antibody tests, viral antigen tests – as appropriate.
4. Orders timely and appropriate image investigations: Chest X-Ray, Cervical Spine X-Ray, X-Ray Pelvis, X-Ray Abdomen, CT Scan Brain, CT Scan Thorax, CT Scan Abdomen, USG Abdomen and Pelvis, Echocardiography – as appropriate.
5. Integrates clinical findings with reports of laboratory investigations to form a differential diagnosis.

6. Identifies abnormalities and interprets point-of-care laboratory investigation reports, including: Arterial Blood Gas Analysis (pH, PaO₂, PCO₂, Standard HCO₃, Base Excess, Lactate, Anion Gap), bedside 12 lead ECG, bedside Chest X-Ray AP view.
7. Interprets CT scan chest and identifies common abnormalities (lung consolidation, pneumothorax, pleural effusion, lung abscess, pericardial effusion, mass lesions), CT scan abdomen (hemoperitoneum, ascites, intestinal obstruction, large mass lesions, retroperitoneal hematoma, spleen injury, pelvic hematoma, liver abscess, pelvic abscess, subdiaphragmatic abscess), CT scan brain (extradural hematoma, subdural hematoma, intracerebral and intraventricular hemorrhage, brain abscess, hydrocephalus).
8. Identifies rapidly life-threatening clinical signs, including: rapid deterioration of consciousness (A V P U scale), pulse rate < 50 and > 180 minus age, Hypoxia (SpO₂ < 93%), Systolic BP < 100 mmHg and > 200 mmHg, Respiratory Rate > 30/min, Non-normal breathing, Severe Hyperthermia (Temperature > 104°F or 40°C), Severe Hypothermia (< 95°F or 35°C), Hypoglycemia (CBG < 60 mg/dL), Stridor, Active Bleeding, Generalized Seizures.
9. Assesses patient with severity-of-illness score (SAPS II):
<https://www.mdcalc.com/simplified-acute-physiology-score-saps-ii>
10. Assesses patient with multiorgan dysfunction score (SOFA score):
<https://www.mdcalc.com/sequential-organ-failure-assessment-sofa-score>

C. Disease management in ICU as per Standard Treatment Guidelines of Govt of India:

<http://clinicaestablishments.gov.in/WriteReadData/5821.pdf>

<http://clinicaestablishments.gov.in/En/1068-standard-treatment-guidelines.aspx>

1. Assesses and Orders management of Acute Exacerbation of COPD.
2. Assesses and Orders management of Severe Acute Asthma.
3. Assesses and Orders management of Acute Respiratory Failure.
4. Assesses and Orders management of Acute Respiratory Distress Syndrome (ARDS).
5. Assesses and Orders initial management of Acute Liver Failure.
6. Assesses and Orders initial management of Brain Death in ICU.
7. Assesses and Orders management of New Onset Fever in the ICU patient.
8. Assesses and Orders management of Hypotension and Shock in the ICU patient.
9. Assesses and Orders management of Acute Pulmonary Embolism.
10. Assesses and Orders management of Severe Sepsis.
11. Assesses and Orders management of Severe Community Acquired Pneumonia.
12. Assesses and Orders management of Status Epilepticus.
13. Assesses and Orders management of Diabetic Emergencies (Hypoglycemia Coma, Diabetic Ketoacidosis, Diabetic Hyperosmolar Coma).
14. Assesses and Orders management of patients with medical co-morbidities after major and supra-major surgeries.
15. Assesses and Orders management of Acute Renal Failure.
16. Assesses and Orders management of Acute Complications of Chronic Renal Failure.
17. Assesses and Orders postoperative management of patient recovering from Severe Obstetric Hemorrhage.
18. Assesses and Orders initial management of Severe Trauma Victim.

19. Assesses and Orders initial management of Traumatic Brain Injury.
20. Assesses and Orders initial management of Spine Injury.
21. Assesses and Orders initial management of Stroke.
22. Assesses and Orders initial management of Acute Coronary Syndrome.
23. Assesses and Orders initial management of Severe Gastrointestinal Hemorrhage.
24. Assesses and Orders initial management of Drug Overdose, Intoxication, Poisoning.
25. Assesses and Orders initial management of Severe Acute Pancreatitis.
26. Assesses and Orders initial management of Burn Victim.
27. Assesses and Orders initial management of patient with Massive Hemoptysis.
28. Assesses and Orders initial management of Acute Complications of Chronic Heart Failure.

D. Therapeutic interventions or organ system support in single or multiple organ failure

1. Assesses and Orders management of fluid and electrolyte disorders.
2. Assesses and Orders management of acid-base disorders.
3. Assesses and Orders oxygen therapy, including delivery device (face mask / venturi mask / high flow nasal O₂), flow rate and duration of therapy.
4. Assesses and Orders non-invasive ventilation (NIV) therapy. Set IPAP, EPAP, T-insp, T-exp, FiO₂ (set nasal O₂ flow rate in case of standalone NIV machine).
URL: <https://www.ijccm.org/doi/IJCCM/pdf/10.5005/jp-journals-10071-G23186>
5. Assesses and initiates invasive mechanical ventilation. Set Initial Mode to Volume Control, Tidal Volume (5 – 6 mL/kg ideal body weight), Rate (15 – 20/min), PEEP 4 – 8 mbar, I:E 1:1.5 to 1:2, FiO₂ 50%. Initiates appropriate sedation with morphine / pethidine / fentanyl / tramadol infusion or SC injections, with midazolam or dexmedetomidine infusion while patient is on invasive mechanical ventilation.
URL: [URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7155908/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7155908/)
6. Assesses and performs daily Spontaneous Breathing Trials (Pressure support with PEEP, or Invasive BiPAP) to gradually wean patient from ventilator, as soon as the underlying disease process clinically appear to resolve.
7. Assesses and Orders maintenance fluid therapy for patients not on regular diet for short duration (< 48 hours).
8. Assesses and Orders parenteral nutrition therapy for patients not on regular diet for prolonged duration (> 48 hours).
9. Assesses and Orders enteral nutrition through nasogastric tube for patients unable to take oral feeds.
10. Assesses and Orders analgesics and sedatives, including paracetamol, morphine, pethidine, fentanyl, tramadol, midazolam, dexmedetomidine to alleviate pain & distress and aid comfort of the critically ill patient.
11. Assesses and Orders management of delirium in the critically ill patient.
12. Assesses and Orders inotropes and vasopressor therapy for hypotension and shock (Noradrenaline 100 mcg/mL or Dopamine 10mg/mL @ 3 – 15 mL/h IV infusion).
13. Orders stress ulcer prophylaxis.
14. Orders appropriate empiric antimicrobial drug therapy in appropriate dosage.
URL: http://pbhealth.gov.in/amr_guideline7001495889.pdf

15. Assesses the need and Orders blood component requisition, orders cross-match, and orders transfusion of blood products (PRBC, RDP, SDP, Cryoprecipitate, FFP) as appropriate.
16. Assesses and Orders DVT prophylaxis, anticoagulant therapy, antiplatelet therapy, fibrinolytic therapy, anti-fibrinolytic therapy.

E. Bedside ICU procedures (according to clinical indications in individual patients)

1. Performs modified rapid sequence induction intubation in patients while maintaining universal safety precautions, as per published best practice guideline in Anesthesiology. 2020 Mar 26. doi: 10.1097/ALN.0000000000003296.
URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7155908/>
2. Orders and Supervises Nurses to perform Oral Suction and Tracheal Suction and Toileting (using closed tracheal suction system only and universal precautions).
3. Periodically Assesses, Supervises the monitoring of patients (by Nurses), Makes appropriate changes in Ventilator Settings for patients on non-invasive and invasive mechanical ventilation.
4. Performs arterial puncture for ABG sampling and / or arterial cannulation.
5. Performs nasogastric tube placement.
6. Supervise non-anesthesiologists if they encounter difficult urinary catheterization.
7. Performs central venous cannulation under expert supervision (especially in anticipated difficult cases) while maintaining universal safety precautions. If already proficient in the central venous catheterization procedure, performs the procedure without supervision.
URL: <https://www.ijccm.org/doi/IJCCM/pdf/10.5005/jp-journals-10071-G23183>
8. Supervise non-anesthesiologists if they encounter difficult peripheral venous cannulation.
9. Performs cardioversion and defibrillation.
10. Performs diagnostic lumbar puncture.
11. Performs Basic Life Support in patients with cardiac arrest, while maintaining universal safety precautions.
12. Performs and acts as a team leader in the delivery of Advanced Cardiac Life Support to patients with cardiac arrest, while maintaining universal safety precautions.
13. Anesthesiologists without formal ICU training and or without proficiency in a particular ICU procedure, should perform the procedure *only* under the direct supervision of an expert in critical care or specialist in that particular field. Such bedside ICU procedures include: Percutaneous Tracheostomy, Conventional Tracheostomy, Temporary Transvenous Cardiac Pacing, Thoracentesis, Pericardiocentesis, Chest Tube Thoracostomy, Diagnostic and Therapeutic Bronchoscopy, Point-of-Care USG, High Frequency Oscillatory Ventilation, Extra Corporeal Membrane Oxygenation, Pulmonary Artery Catheterization, Intra Aortic Ballon Pump, Left Ventricular Assist Device, Transthoracic Echocardiography, Trans Esophageal Echocardiography, Hemodialysis, Continuous Renal Replacement Therapies (CVVH, CVVHD, CVVHDF, SCUF, SLED), Molecular Adsorbent Recirculation System Therapy, Percutaneous Feeding Gastrostomy, Nasojejun Tube Insertion, Suprapubic Cystostomy, Percutaneous Nephrostomy, Bone Marrow Sampling, Intracranial Pressure Monitoring, Transcranial Doppler Monitoring, Cancer Chemotherapy, Immunosuppressive Therapies.

F. Professionalism

1. Formulates clinical decisions with respect for ethical principles (Respect Autonomy of Patient / near relative of patient, Do no harm, Beneficence, Justice) and legal principles (Code of Medical Ethics Regulations, Indian Penal Code).
2. Practices and supervises safe administration of drugs to patients – Five Rights of Drug Safety: right patient, right drug, right dose, right route, right time. Checks adverse drug interactions periodically by drug chart review.
URL: <https://www.webmd.com/interaction-checker/default.htm>
3. Assesses and Orders the safe and timely discharge of patients from the ICU based on ICU discharge criteria.
4. Communicates the continuing care requirements of patients at ICU discharge to healthcare professionals, patients, and relatives.
5. Involves patients and their near relative in decisions about care and treatment (including informed consent and end-of-life care).
6. Promotes effective team work by closed loop clear communication (verbally acknowledges understanding of verbal communication of another team member).
7. Communicates politely yet firmly to other team members if they make mistakes or lapses.
8. Communicates and explains clinical care plan of patients to patients, their families, and professional associates.
9. Communicates and explains care plans to ICU nurses.
10. Explains and updates family members about patient's physical condition based on a simple five point all round appraisal: Status of Brain function, Heart function, Lung function, Kidney function, Liver function; considering dysfunction or failure of each of these organ function have approximately 20% influence on the mortality risk. Avoids medical jargon and technical words during conversation with family, to avoid confusion and misinterpretation of medical information as contradictory information by family.
11. Communicates and explains family members about improvement or deterioration of patient's condition and new onset problems during the ICU stay of the patient.
12. Communicates and explain family members (in presence of another professional colleague or nurse), the death care of the patient (including events that lead to cardiac arrest, resuscitation procedures performed, and time of declaration of death).
13. Maintains accurate medical records and documentation.
14. Respects privacy, dignity, confidentiality, and legal constraints on the use of patient data.
15. Records Death Summary accurately.
16. Issues Medical Certificate of Cause of Death accurately, taking particular care in respect of: name of patient, age / DOB, sex, MRD no, time and place of death, immediate cause of death (name of disease, not any pathophysiological condition or symptom), antecedent cause of death (name of disease, not pathophysiological condition or symptom), associated medical conditions (name of disease, not pathophysiological condition or symptom), full legible signature, medical council's registration number, date and time of issue of certificate.
17. Informs Local Police Authority in writing (through on-duty local hospital authority) about death of patient in a Medico Legal Case (unnatural death, suspicion of foul play in death, cases of death with allegation of medical negligence, dead on arrival cases, victim of assault or suicide or poisoning or accidental injury).

18. Practices Universal Precautions, Hand Hygiene, and complies with all Infection Prevention and Control Measures in ICU.
19. Ensures continuity of patient care through handover of clinical information to professional colleagues.
20. Seeks learning opportunities and integrates new knowledge and skills into clinical practice.

References (all URL last accessed on 24/04/2020):

1. Disaster Management Act. Union of India.
URL: https://ndma.gov.in/images/ndma-pdf/DM_act2005.pdf
2. Code of Medical Ethics Regulations (as amended from time to time), BoG in supersession to MCI. URL: <https://www.mciindia.org/CMS/wp-content/uploads/2017/10/Ethics-Regulations-2002.pdf>
3. Standard Treatment Guidelines (Govt of India).
URL: <http://clinicaestablishments.gov.in/WriteReadData/5821.pdf>
<http://clinicaestablishments.gov.in/En/1068-standard-treatment-guidelines.aspx>
4. National Antibiotic Policy (Govt of India).
URL: http://pbhealth.gov.in/amr_guideline7001495889.pdf
5. Intubation and Ventilation amid the COVID-19 Outbreak. Anesthesiology. 2020 Apr 8 : 10.1097/ALN.0000000000003296.
URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7155908/>
6. Indian Society of Critical Care Medicine Experts Committee Consensus Statement on ICU Planning and Designing, 2020. Indian J Crit Care Med. 2020 Jan; 24(Suppl 1): S43–S60.
URL: <https://www.ijccm.org/doi/IJCCM/pdf/10.5005/jp-journals-10071-G23185>

Dr Jyotirmay Kirtania

ORCID ID: 0000-0002-4426-6877



Peer reviewed document, version dated 25/04/2020